Table 1: Trust acreages in the Lake Whatcom Planning Area

Trust	Acres	Percent
Forest Board Transfer Lands (Whatcom County)	8,473	54
Forest Board Transfer Lands (Skagit County)	690	4
Forest Board Purchase Lands (Whatcom County)	881	6
Common School (K-12 schools)	4,627	30
Agricultural School (WSU)	193	1
Capitol Buildings	286	2
Scientific School (WSU)	557	3
Total trust acres	15,707	100

Description of the Proposal and Alternatives

Objectives, Location and Description of the Planning Process

Objectives of the Proposal

The Department must prepare a landscape plan to guide both short-term and long-term management of state trust lands in the Lake Whatcom Landscape Planning Area, consistent with DNR's Forest Resource Plan (1992), DNR's Habitat Conservation Plan (1997) and the Engrossed Second Substitute Senate Bill 6731 [now 2000 Washington Laws Chapter 205], passed in 2000.

The proposed action is the adoption, by the Board of Natural Resources, of a landscape plan for state trust lands, in accordance with the policies of the 1992 Forest Resource Plan.

The purpose of the landscape plan is to develop a management strategy which will simultaneously provide environmental protection on DNR-managed lands, contribute to water quality in the planning area, and assure the economic viability of trust lands for the long-term benefit of trust beneficiaries.

Description of the Physical Location

The Lake Whatcom Landscape Planning Area encompasses approximately 15,700 acres of forested state trust lands in western Whatcom County. The planning area lies immediately east and southeast of the City of Bellingham, and includes lands within the Lake Whatcom watershed boundary, a block of lands west of Cain and Reed lakes and small, isolated parcels immediately adjacent to the watershed.

Description of the Alternatives

The three alternatives appear in table form, showing the strategies for each objective.

No-Action Alternative (Identical to PDEIS Alternative 1)

The No-Action Alternative incorporates the Department's existing policies, procedures, legal requirements and management commitments, including but not limited to the Forest Resource Plan, Forest Practices Rules and Habitat Conservation Plan.

Objective 1	**Ensure no significant risk to public health, safety and resources, and tribal archaeological and cultural resources from forest-management-related mass-wasting events.**
Mass-wasting	***Strategies:*** • Follow Lake Whatcom Watershed Analysis mass-wasting prescriptions relating to timber harvesting. [See Map G-1 for location of mass-wasting units.] Proposed activities on potentially unstable slopes, as defined in the "Slope Stability Assessment," that lie outside of the Watershed Analysis mass-wasting units will require on-site evaluation by a DNR specialist. o Road reconstruction on areas identified by the above evaluation as unstable will consider specialists recommendations. • In Smith Creek, large woody debris, which increases the risk of log jams and resulting debris torrents, will be cut into chunks to reduce debris build up, to provide for public safety of downstream residents.[2]
Objective 2	**Maintain and restore the sediment regime within the range of natural variability**.
Roads & sediments	***Strategies:*** • Follow Forest Practice Rules and watershed analysis prescriptions for road construction and maintenance. o No road construction during "wet conditions" (typically Nov. 1 – March 31) unless the contractor can demonstrate that protection of resources can be provided. • Minimize new road construction using harvest systems planning • No timber and rock hauling during "wet conditions" on DNR forest roads without surfacing or surfaced with non-durable rock, where sediment has the potential to deliver to streams. • Develop and begin implementation of a road maintenance and abandonment plan based on the specifications in WAC-222-24-050 and 051, within one year of the completion and approval of the landscape plan. o All orphaned roads will be inventoried and assessed relative to risk of failure and/or potential for sediment delivery. Mitigation work on orphaned roads will be done where a clear risk to public safety or potential for resource damage exists and accessing the site will not cause greater resource damage or public risk.
Objective 3	**Protect and restore riparian and wetland habitat to sustain healthy native aquatic, wetland, and riparian ecosystems**.
RMZs	***Strategies:*** • Establish riparian management zones while planning management activities. Manage lands within such zones to protect water quality and riparian habitat. o Type 1, 2, and 3 waters shall have a designated riparian management zone with a minimum horizontal width (each side) equal to the

[2] This strategy is based on a negotiated legal settlement between DNR and residents in this area.

Wetlands	100-year-site-potential tree height or 100 feet, whichever is greater; timber harvest allowed per HCP and forestry handbook procedures. [Current procedures do not allow harvesting within riparian buffers. However, the HCP agreement anticipates that some harvesting will occur: (a) No timber harvest within the first 25 feet horizontal distance from the outer margin of the 100-year floodplain; (b) the next 75 feet of the riparian buffer shall be a minimal-harvest area, and (c) the remaining portion of the riparian buffer shall be a low-harvest area. The HCP provides performance goals for these three areas. Procedures to implement the HCP intent are still being developed.] o Type 4 waters shall have a designated riparian management zone with a minimum horizontal width (each side) of 100 feet; timber harvest allowed per HCP and forestry handbook procedures. o The riparian management zone distance will be measured horizontally from the outer edge of the 100-year flood plain. o The width of the riparian management zone shall be increased to include an outer wind buffer, consistent with the HCP, on Type 1, 2, & 3 areas prone to windthrow. Where there is at least a moderate potential for windthrow, wind buffers shall be 100 feet wide on Type 1 & 2 waters and 50 feet wide on Type 3 waters that are wider than 5 feet. • Provide forested wetland buffers on wetlands consistent with HCP riparian management strategy. o For wetlands greater than 1 acre in size, provide a wetland buffer equal in width to the 100-year-site-potential tree height or 100 feet, whichever is greater. o For wetlands greater than 0.25 acre and less than one acre, provide a 100-foot wetland buffer. o Ensure that timber harvest in forested portions of wetlands and wetland buffers perpetuate a windfirm stand with a minimum basal area of 120 square feet per acre.
Objective 4	**Maintain and restore the forest hydraulic regime for each sub-basin within the range of natural variability**.
Hydrologic maturity	***Strategies:*** • Follow Lake Whatcom watershed analysis prescriptions relating to hydrologic maturity in rain-on-snow zones: o Maintain a minimum of (692) acres of hydrologically mature (> 40 years) forest in the Olsen Creek sub-basin. o Maintain a minimum of (1,200) acres of hydrologically mature (> 40 years) forest in the Smith Creek sub-basin.
Objective 5	**Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems**.
Chemicals	***Strategies:*** • Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation). Use the following prioritized application methods: 1) no treatment, 2) non-chemical, 3) ground-applied, and 4) aerial-applied. Select a cost effective method by considering the no treatment method first and then moving sequentially down the list. • Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation) and 34 (Thinning, Fertilizing, and Pruning). Use prioritized application method listed in Strategy 5.1.
Objective 6	**Maintain and restore a diversity of natural and managed functional habitat conditions to benefit native fish and wildlife species, particularly those identified in WDFW priority and habitat species (PHS).**
Fish habitat	***Strategies:*** • Ensure all native fish species have access throughout their natural range at all life stages. o Identify, prioritize, and replace fish-blocking culverts with fish-passage structures. Replacement will occur during planned management activities or during implementation of the Road Maintenance & Abandonment Plan.

Older-forest conditions Bald eagles Marbled murrelet Unlisted species of concern Uncommon habitats	• Retain riparian and wetland buffers and off-base unstable slope areas in older forest conditions, letting those not in that condition yet to grow into it. • Protect all known bald eagle nesting, roosting and foraging sites. o Follow Forestry Handbook Procedure PR 14-004-330 for protecting bald eagle nest sites and roosts, including the development of site-management plans for bald eagle habitat pursuant to Forest Practices Regulations (WAC 232-12-292). o Follow the HCP riparian and large, structurally unique tree retention strategies, which should result in increased abundance of large trees for bald eagle nesting and roosting. • Conduct Pacific Seabird Group (PSG) protocol surveys of all known reclassified marbled murrelet habitat to determine occupancy. o Protect occupied stands and develop a long-term conservation strategy for the North Puget Planning Unit, as required in the HCP. • Follow specific species-by-species Forestry Handbook procedures. The following unlisted species of concern have been identified in Table XX as existing in or near the Lake Whatcom landscape and have Forestry Handbook procedures in place. Wherecurrent procedures do not exist, consult with the Region wildlife biologist. o Common Loon – see Forestry Handbook Procedure PR 14-004-240: Protecting Common Loon Nests. o Northern Goshawk – see Forestry Handbook Procedure PR 14-004-260: Protecting Northern Goshawk Nests West of the Cascades. o Pileated Woodpecker – see Forestry Handbook Procedure PR 14-004-290; Protecting Pileated Woodpecker Nests. • Follow specific Forestry Handbook Procedures. The following uncommon habitats have procedures: o Cliffs – see Forestry Handbook Procedure PR 14-004-190: Protecting Cliffs. o Talus Fields – see Forestry Handbook Procedure PR 14-004-170: Protecting Talus Field. o Caves – see Forestry Handbook Procedure PR 14-004-180: Protecting Caves. o Balds – see Forestry Handbook Procedure PR 14-004-220: Protecting Balds.
Objective 7	**Permanently retain green trees, snags, & down logs to support mature forest functions**.
Snags, green trees, down wood	***Strategies:*** • Implement the following snag and green tree retention procedures on all harvest units, consistent with PR-14-006-090: o Retain seven (7) percent of all trees that are 12” dbh or larger or 8 trees per acre, whichever is greater, as permanent legacy trees. o Legacy trees shall be dominant and co-dominant trees o Legacy trees shall include at least five windfirm green trees and three snags per acre harvested (subject to Dept. of Labor and Industries safety standards) o Choose as legacy trees, large trees with structural characteristics important to wildlife and old growth remnants o One of these trees must be from the largest diameter class o One additional tree must be from the dominant crown class o Leave snags whenever safe and practicable. Retain snags that are at least 15"dbh and 30' tall. Give priority to large hollow snags, hard snags with bark, and snags that are at least 20” dbh and 40’ tall. o If fewer than three snags per acre can be left, additional live trees will be retained so that the average per acre equals 7 percent or 8 trees per acre, whichever is greater.
Objective 8	**Maintain or increase soil productivity and health**.
Snags	***Strategies:*** • Implement the strategies for snag and green tree retention above.

Harvest methods	• Select harvest methods that maintain or facilitate establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction.
Objective 9	**Preserve, protect, and restore significant historic, archeological, traditional current use and cultural resources.**
References	***Strategies:*** • Identify and protect cultural resources using the following DNR policies, procedures, and guidelines, as well as state and federal acts, rules, regulations, accords, agreements, and executive orders, where applicable. o **Implement DNR Policy P006-001 Historical, Cultural and Archaeological Sites, 7/31/96: "**All department personnel will identify potential archaeological, historic and cultural sites/resources in the course of their normal duties. Discovered resources will be recorded and inventoried in coordination with the Office of Archaeological and Historic Preservation (OAHP) and/or the appropriate Tribes so that they can be protected to the full extent allowable by law. o It is the policy of the department that Forest Resource Plan Policy #24 "Identifying Historic Sites," shall apply to all department managed lands. That policy states "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level, which, at a minimum, meets regulatory requirements…." o **DNR Tribal Policy PO06-002, Jan. 16, 1991** as referenced in Appendix F of the 1992 Forest Resource Plan, in PO06-001, and as reflected in the Revised DNR Tribal Policy, June 1998. o **1992 DNR Forest Resource Plan: Policy #8 "**Special Forest Products"; **Policy #13 "**Special Ecological Features"; **Policy #16 "**Landscape Planning"; **Policy #19 "**Watershed Analysis"; **Implement Policy #24: "**Historic and Archaeological Sites": "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level which, at a minimum, meets regulatory requirements." **Policy #28 "**Developing and Maintaining Roads"**; Policy #35 "**Implementation Policies: Public Involvement": **"**The department will solicit comment from the public, tribes, and government agencies when implementing the Forest Resource Plan and when revising policies contained in the document." o **DNR Forestry Handbook Procedures:** PR 14-004-030 "Identifying Historic Sites"; PR 14-004-010 "Identifying Off-base Lands"; PR 14-004-110 "Wetland Management". o **DNR Final Habitat Conservation Plan** (September 1997) and by reference: **(1) DNR DEIS** (March 22, 1996), 4.9 Cultural Resources, pgs. 4-525-4-528; and **(2) DNR HCP FEIS** (October 25, 1996), p. 3-121 C. Cultural. o **Washington State Rules, Regulations, Agreements:** RCW 27.34 Archaeological and Historic Preservation**;** RCW 27.44 Indian Graves and Records; RCW 27.53 Archaeological Sites and Resources Act; RCW 43.21C.020 & WAC 197-11 State Environmental Policy Act; RCW 25 Office of Archaeology and Historic Preservation; RCW 76.09 Forest Practices Act; WAC 222 Forest Practices Rules; 1999 Forest & Fish Plan Appendices G: Cultural Resource Module, N2: DNR Cultural Resources Planning, O:Cultural Resources Management & Protection Plan; 1987 TFW Agreement; 1989 Centennial Accord. o **Federal Regulations/Laws/Executive Orders:** 36 CFR Part 800 Protection of Historic Properties; 42 U.S.C. AIRFA American Indian Religious Freedom Act; 33 U.S.C Clean Water Act; 16 USC Endangered Species Act; Title 16 U.S.C 1906 Antiquities Act; Title 16 U.S.C., PL 96-95 Archaeological Resources Protection Act of 1979; PL 101-601 Native American Graves Protection and Repatriation Act; PL 91-190 National Environmental Policy Act, as applicable to DNR HCP; 1971 Executive Order #11593 Protection and Enhancement of the Cultural Environment.

Database Meetings	• Use the DNR Planning and Tracking (P&T) System, which links the user to DNR's Total Resource Application Cross-Reference (TRAX) database system, prior to planning resource management activities to identify known Cultural Resources Sites, per DNR PR14-004-030 "Identifying Historic Sites". • When management activities involve or affect cultural resources, DNR will meet with the affected tribe(s) with the objective of agreeing to a plan for protecting the archeological or cultural value. (per WAC 222-20-120) • DNR will meet regularly with the affected tribe(s) to discuss plans or management activities per PO06-002 Tribal Relations Policy, January 16, 1991 and June 2, 1998)
Objective 10	**Provide and facilitate tribal access to state managed lands for traditional cultural and religious practices and treaty guaranteed hunting and gathering.**
Access	***Strategies:*** • Tribal use is provided for by Policy No. PO10-002 (Public Use on DNR-Managed Trust Lands), provided resources and assets are not at risk. • Tribal access for hunting, fishing and gathering per Point Elliott Treaty of 1855 Section 5 Open and unclaimed lands.
Objective 11	**Create and implement a sustained yield model specific to the Lake Whatcom watershed that encompasses the revised management standards and that is consistent with the sustained yield established by the Board of Natural Resources.**
Rotation age Thinning	***Strategies:*** • The average rotation age is consistent with Forest Resource Plan policy as specified by site and species – generally averaging 60 years. • Harvest trees in dense stands (commercial thinning), before trees die from stand competition, to capture revenue that would otherwise be lost.
Objective 12	**Maintain or improve commercial forest productivity and health.**
	Strategies: • Select a harvest method that maintains or facilitates establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction. • Following regeneration harvests, reforest with a majority of Douglas-fir intermixed with western redcedar at all elevations in the planning area. • Pre-commercially thin overstocked stands. • During the first two decades of the plan, accelerate the harvest of mature and over-mature hardwood stands on sites better suited for conifers. • Control competing vegetation that would dominate crop trees or significantly inhibit growth in a stand.
Objective 13	**Cultivate higher value commercial forest products**.
	Strategies: • Plant and encourage growth of western redcedar to develop pole products. • Prune, to increase wood quality, where it will generate a higher economic return. • Consider tree selection during commercial thinning that promotes future log quality.
Objective 14	**Develop and maintain a transportation network that facilitates commercial management activities**.
	Strategies: • Develop and begin implementation of a Road Maintenance and Abandonment Plan within one year of the completion and approval of the landscape plan. • Use harvest system planning to identify necessary roads and reduce the total length of new road construction. • Abandon roads to Forest Practices standards when they are no longer needed for management.

	• Install and maintain gates where necessary to reduce road maintenance costs, resource impacts, vandalism, and garbage dumping.
Objective 15	**Maintain and increase lease revenue from existing and future communication sites.**
	Strategies: • Continue to lease tower and building space to interested parties. • When possible, review rental rates. Increase rates if market conditions allow. • Seek new communication site customers.
Objective 16	**Consider opportunities to generate revenue from oil and gas exploration.**
	Strategies: • ***Limit exploratory drill sites to surface locations outside the watershed. Subsurface diagonal drilling allowed.*** • If sufficient oil or gas reserves are found, allow development of the resource if compatible with other landscape objectives.
Objective 17	**Consider the marketing of special forest products such as evergreen boughs, salal greens, moss, and native plants, as appropriate.**
	Strategies: • Ensure potential products, if sold, will not negatively impact other resource objectives or traditional tribal use.
Objective 18	**Consider other revenue generating mechanisms.**
	The department has been researching the following revenue mechanisms. However, since none of these are active at the present, they are not part of the "baseline" assumed for Alternative 1 when comparing income among the alternatives in Section 4. • Green certification • Carbon sequestration • Lease(s) • Conservation easement • Reconveyance • Exchange or sell trust lands.
Objective 19	**Manage dispersed, low impact recreation**.
	Strategies: • Public use and recreation is allowed in accordance with Policy No. PO10-002 (Public Use on DNR-Managed Trust Lands), provided resources and assets are not at risk. • As budget allows, develop a comprehensive recreation plan in cooperation with specific user groups such as the horseback riders, mountain bikers, hikers and other interested parties that minimizes impacts to trust resources and assets. • Limit access to streams, riparian areas, and wetlands by motorized vehicles through permanent road closures, vehicle barriers, and public education and enforcement.
Objective 20	**Reduce the visual impact of forest management activities in high visibility areas as shown on Map S-1.**
	Strategies: • Follow Forest Practice Regulations and Forest Resource Policy No. 32 (Green-up of Harvest Units), in conjunction with Policy No. 16 (Landscape Planning). • On all the state trust lands, including "moderate visibility" areas on Map S-1, the following guidelines will be used for even-aged harvest units: o Harvest units will not exceed 100 acres except in the case of emergency salvage operations due to extensive "blowdown", insect or

	disease infestation, or public safety concern. o No harvesting within 300 feet of another harvest area if combined acreage of harvest areas exceeds 100 acres o Harvest units with trees greater than 4 feet high are considered "greened-up." • In "high visibility" areas on Map S-1, the department will consider the size, shape, and location of harvest units and distribution of leave trees when planning timber sales.
Objective 21	**Support stewardship education opportunities and partnerships that address community needs.**
	Strategies: • Cooperate with and provide educational opportunities to requesting educational institutions and other interested parties consistent with the department's public use policy No. PO10–002. • DNR will continue to be an active participant in the Forest Practices Timber Fish Wildlife (TFW) process and the Lake Whatcom Forestry Forum.

Preferred Alternative

The Preferred Alternative for the DEIS was developed by the Committee and DNR and adopted by a Committee consensus decision. It incorporates all the legislative requirements of E2SSB 6731in addition to Department policies, procedures, legal requirements and management commitments. The Preferred Alternative seeks to balance ecological, social, cultural and economic values in satisfying the objectives identified for the Lake Whatcom Landscape.

Objective 1	**Ensure no significant risk to public health, safety and resources, and tribal archaeological and cultural resources from forest-management-related mass-wasting events.**
Mass-wasting	***Strategies:*** • Timber harvest and road construction upon potentially unstable slopes (as defined in the "Slope Stability Assessment" and shown generally on Map G-2 "Potentially Unstable Slopes") shall be carefully regulated. o Proposed activities on or adjacent to potentially unstable slopes shall be reviewed by the inter-jurisdictional committee who may make site specific recommendations. Inter-jurisdictional review means an annual sharing of plans for management activities; for each proposed activity there will be an on site review of the proposal by an inter-jurisdictional and inter-disciplinary team. o Proposed activities on potentially unstable slopes will require on-site evaluation by a DNR specialist to determine actual unstable areas. o No road construction or timber harvesting will occur on areas identified during the above evaluation as unstable. o Road reconstruction on areas identified by the above evaluation as unstable will consider inter-jurisdictional committee and specialists recommendations. o Harvesting or road construction outside of identified unstable areas, but within the mapped "potentially unstable slopes," will consider inter-jurisdictional committee and specialists recommendations.

	• *Slope stability assessment work generally identified "high hazard" and "moderate hazard" mass-wasting units (See Map G-1) within the potentially unstable slopes areas. Watershed Analysis Areas of Resource Sensitivity #1 is rated "moderate hazard"; ARS #2, 3 and 4 are rated "high hazard."* o *Proposed activities on or adjacent to potentially unstable slopes shall be reviewed by the inter-jurisdictional committee who may make site specific recommendations. Inter-jurisdictional review means an annual sharing of plans for management activities; for each proposed activity there will be an on site review of the proposal by an inter-jurisdictional and inter-disciplinary team.* o *Follow Lake Whatcom Watershed Analysis mass-wasting prescriptions relating to timber harvesting.* o *On unstable slopes in ARS #2, #3 and #4 or areas identified as unstable above, new road construction shall be prohibited and old road reconstruction shall be limited.* o Follow Watershed Analysis prescription for road construction in ARS #1. o Existing road reconstruction will follow Watershed Analysis road construction prescriptions in ARS #1, 2, 3 and 4. • In Smith Creek, large woody debris, which increases the risk of log jams and resulting debris torrents, will be cut into chunks to reduce debris build up, to provide for public safety of downstream residents.[3]
Objective 2	**Maintain and restore the sediment regime within the range of natural variability**.
Roads & sediments	***Strategies:*** • Follow Forest Practice Rules and watershed analysis prescriptions for road construction and maintenance. o No road construction during "wet conditions" (typically Nov. 1 – March 31) unless the contractor can demonstrate that protection of resources can be provided. • Minimize new road construction using harvest systems planning • No timber and rock hauling during "wet conditions" on DNR forest roads without surfacing or surfaced with non-durable rock, where sediment has the potential to deliver to streams. • Develop and begin implementation of a road maintenance and abandonment plan based on the specifications in WAC-222-24-050 and 051, within one year of the completion and approval of the landscape plan. o All orphaned roads will be inventoried and assessed relative to risk of failure and/or potential for sediment delivery. Mitigation work on orphaned roads will be done where a clear risk to public safety or potential for resource damage exists and accessing the site will not cause greater resource damage or public risk. o All identified road maintenance and abandonment work will be completed within 4 years of Board of Natural Resources approval of the landscape plan.
Objective 3	**Protect and restore riparian and wetland habitat to sustain healthy native aquatic, wetland, and riparian ecosystems**.
RMZs	***Strategies:*** • Establish riparian management zones along all streams while planning management activities. All riparian management zones should be evaluated for the need for a buffer to protect their functions. Manage lands within such zones to protect water quality and riparian habitat. Harvest in any riparian management zone shall only be conducted to achieve ecosystem restoration consistent with principles in DNR's HCP. Activities proposed within riparian management zones and wetlands shall be reviewed by the inter-jurisdictional committee, who may make site-specific recommendations. Inter-jurisdictional review means an annual sharing of plans for management activities; for each proposed activity there will be an on site review of the

[3] This strategy is based on a negotiated legal settlement between DNR and residents in this area.

Wetlands	proposal by an inter-jurisdictional and inter-disciplinary team. o Type 1, 2, and 3 waters shall have a designated riparian management zone with a minimum horizontal width (each side) equal to the 100-year-site-potential tree height or 100 feet, whichever is greater; timber harvest allowed per HCP and forestry handbook procedures. [Current procedures do not allow harvesting within riparian buffers. However, the HCP agreement anticipates that some harvesting will occur: (a) No timber harvest within the first 25 feet horizontal distance from the outer margin of the 100-year floodplain; (b) the next 75 feet of the riparian buffer shall be a minimal-harvest area, and (c) the remaining portion of the riparian buffer shall be a low-harvest area. The HCP provides performance goals for these three areas. Procedures to implement the HCP intent are still being developed.] o Type 4 waters shall have a designated riparian management zone with a minimum horizontal width (each side) of 100 feet; timber harvest allowed per HCP and forestry handbook procedures. o Type 5 waters shall have a designated riparian management zone with a minimum horizontal width (each side) of 33 feet. o No timber harvests shall occur in type 5 riparian management zones except as needed for roads and yarding corridors. Trees cut for yarding corridors through type 5 riparian management zones shall be retained as down wood. o The riparian management zone distance will be measured horizontally from the outer edge of the 100-year flood plain or the outer edge of the channel migration zone (CMZ) where it exists on Type 1-3 waters, whichever is greater. No harvest shall occur within the CMZ. CMZ standards may apply to Type 4 waters. o The width of the riparian management zone shall be increased to include an outer wind buffer, consistent with the HCP, on Type 1, 2, & 3 areas prone to wind-throw. Where there is at least a moderate potential for windthrow, wind buffers shall be 100 feet wide on Type 1 & 2 waters and 50 feet wide on Type 3 waters that are wider than 5 feet. • Provide forested wetland buffers on wetlands consistent with HCP riparian management strategy. o For wetlands greater than 1 acre in size, provide a wetland buffer equal in width to the 100-year-site-potential tree height or 100 feet, whichever is greater. o For wetlands greater than 0.25 acre and less than one acre, provide a 100-foot wetland buffer. o Ensure that timber harvest in forested portions of wetlands and wetland buffers perpetuate a wind-firm stand with a minimum basal area of 120 square feet per acre. • The DNR is encouraged to avoid harvest in wetlands, consistent with current practice.
Objective 4	**Maintain and restore the forest hydraulic regime for each sub-basin within the range of natural variability**.
Hydrologic maturity	***Strategies:*** • Follow Lake Whatcom watershed analysis prescriptions relating to hydrologic maturity in rain-on-snow zones: o Maintain a minimum of (692) acres of hydrologically mature (> 40 years) forest in the Olsen Creek sub-basin. o Maintain a minimum of (1,200) acres of hydrologically mature (> 40 years) forest in the Smith Creek sub-basin. • The DNR will evaluate the hydrologic implications to sub-basins of all sales with the inter-jurisdictional committee.
Objective 5	**Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems**.
Chemicals	***Strategies:*** • Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation). Use the following prioritized application methods: 1) no treatment, 2) non-chemical and 3) ground-applied. No aerial application of herbicides. Select a cost effective method by considering the no treatment method first and then moving sequentially down the list.

	• Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation) and 34 (Thinning, Fertilizing, and Pruning). Use prioritized application method listed in the strategy above. No aerial application of fertilizers. • Proposed activities for vegetation control or involving use of pesticides or fertilizers shall follow principles of integrated pest management (RCW 17.15.005) and be reviewed by the inter-jurisdictional committee who may make site specific recommendations.
Objective 6	**Maintain and restore a diversity of natural and managed functional habitat conditions to benefit native fish and wildlife species, particularly those identified in WDFW priority and habitat species (PHS).**
Fish habitat Older-forest conditions Bald eagles Marbled murrelet Unlisted species of concern Uncommon habitats	***Strategies:*** • Ensure all native fish species have access throughout their natural range at all life stages. o Identify, prioritize, and replace fish-blocking culverts with fish-passage structures. Replacement will occur during planned management activities or during implementation of the Road Maintenance & Abandonment Plan. • Retain riparian and wetland buffers and off-base unstable slope areas in older forest conditions, letting those not in that condition yet to grow into it. • Protect all known bald eagle nesting, roosting and foraging sites. o Follow Forestry Handbook Procedure PR 14-004-330 for protecting bald eagle nest sites and roosts, including the development of site-management plans for bald eagle habitat pursuant to Forest Practices Regulations (WAC 232-12-292). o Follow the HCP riparian and large, structurally unique tree retention strategies, which should result in increased abundance of large trees for bald eagle nesting and roosting. • Conduct Pacific Seabird Group (PSG) protocol surveys of all known reclassified marbled murrelet habitat to determine occupancy. o Protect occupied stands and develop a long-term conservation strategy for the North Puget Planning Unit, as required in the HCP. • Follow specific species-by-species Forestry Handbook procedures. Procedures may change as a result of adaptive management. The following unlisted species of concern have been identified in Table XX as existing in or near the Lake Whatcom landscape and have Forestry Handbook procedures in place. Where current procedures do not exist, consult with the Region wildlife biologist. o Common Loon – see Forestry Handbook Procedure PR 14-004-240: Protecting Common Loon Nests. o Northern Goshawk – see Forestry Handbook Procedure PR 14-004-260: Protecting Northern Goshawk Nests West of the Cascades. o Pileated Woodpecker – see Forestry Handbook Procedure PR 14-004-290; Protecting Pileated Woodpecker Nests. • Follow specific Forestry Handbook Procedures. The following uncommon habitats have procedures: o Cliffs – see Forestry Handbook Procedure PR 14-004-190: Protecting Cliffs. o Talus Fields – see Forestry Handbook Procedure PR 14-004-170: Protecting Talus Field. o Caves – see Forestry Handbook Procedure PR 14-004-180: Protecting Caves. o Balds – see Forestry Handbook Procedure PR 14-004-220: Protecting Balds.
Objective 7	**Permanently retain green trees, snags, & down logs to support mature forest functions**.
Snags, green trees, down wood	***Strategies:*** • Implement snag and green tree retention procedures on all harvest units, consistent with HCP and forestry handbook procedures. Procedures may change as a result of adaptive management. Current procedures specify: o Retain seven (7) percent of all trees that are 12" dbh or larger or 8 trees per acre, whichever is greater, as permanent legacy trees. o Legacy trees shall be dominant and co-dominant trees o Legacy trees shall include at least five windfirm green trees and three snags per acre harvested (subject to Dept. of Labor and Industries safety

	standards) o Choose as legacy trees large trees with structural characteristics important to wildlife and old growth remnants o One of these trees must be from the largest diameter class o One additional tree must be from the dominant crown class o Leave snags whenever safe and practicable. Retain snags that are at least 15"dbh and 30' tall. Give priority to large hollow snags, hard snags with bark, and snags that are at least 20" dbh and 40' tall. o If fewer than three snags per acre can be left, additional live trees will be retained so that the average per acre equals 7 percent or 8 trees per acre, whichever is greater.
Objective 8	**Maintain or increase soil productivity and health**.
Snags, Harvest methods	***Strategies:*** • Implement the strategies for snag and green tree retention above. • Select harvest methods that maintain or facilitate establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction.
Objective 9	**Preserve, protect, and restore significant historic, archeological, traditional current use and cultural resources.**
	Strategies: • Identify and protect cultural resources using the following DNR policies, procedures, and guidelines, as well as state and federal acts, rules, regulations, accords, agreements, and executive orders, where applicable. o **Implement DNR Policy P006-001 Historical, Cultural and Archaeological Sites, 7/31/96: "**All department personnel will identify potential archaeological, historic and cultural sites/resources in the course of their normal duties. Discovered resources will be recorded and inventoried in coordination with the Office of Archaeological and Historic Preservation (OHAP) and/or the appropriate Tribes so that they can be protected to the full extent allowable by law. o It is the policy of the department that Forest Resource Plan Policy #24 "Identifying Historic Sites," shall apply to all department managed lands. That policy states "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level, which, at a minimum, meets regulatory requirements…." o **DNR Tribal Policy PO06-002, Jan. 16, 1991** as referenced in Appendix F of the 1992 Forest Resource Plan, in PO06-001, and as reflected in the Revised DNR Tribal Policy, June 1998. o **1992 DNR Forest Resource Plan: Policy #8 "**Special Forest Products"; **Policy #13 "**Special Ecological Features"; **Policy #16 "**Landscape Planning"; **Policy #19 "**Watershed Analysis"; **Implement Policy #24: "**Historic and Archaeological Sites": "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level which, at a minimum, meets regulatory requirements." **Policy #28 "**Developing and Maintaining Roads"**; Policy #35 "**Implementation Policies: Public Involvement": **"**The department will solicit comment from the public, tribes, and government agencies when implementing the Forest Resource Plan and when revising policies contained in the document." o **DNR Forestry Handbook Procedures:** PR 14-004-030 "Identifying Historic Sites"; PR 14-004-010 "Identifying Off-base Lands"; PR 14-004-110 "Wetland Management". o **DNR Final Habitat Conservation Plan** (September 1997) and by reference: **(1) DNR DEIS** (March 22, 1996), 4.9 Cultural Resources, pgs. 4-525-4-528; and **(2) DNR HCP** FEIS (October 25, 1996), p. 3-121 C. Cultural. o **Washington State Rules, Regulations, Agreements:** RCW 27.34 Archaeological and Historic Preservation**;** RCW 27.44 Indian Graves and

	Records; RCW 27.53 Archaeological Sites and Resources Act; RCW 43.21C.020 & WAC 197-11 State Environmental Policy Act; RCW 25 Office of Archaeology and Historic Preservation; RCW 76.09 Forest Practices Act; WAC 222 Forest Practices Rules; 1999 Forest & Fish Plan Appendices G: Cultural Resource Module, N2: DNR Cultural Resources Planning, O: Cultural Resources Management & Protection Plan; 1987 TFW Agreement; 1989 Centennial Accord. o **Federal Regulations/Laws/Executive Orders:** 36 CFR Part 800 Protection of Historic Properties; 42 U.S.C. AIRFA American Indian Religious Freedom Act; 33 U.S.C Clean Water Act; 16 USC Endangered Species Act; Title 16 U.S.C 1906 Antiquities Act; Title 16 U.S.C., PL 96-95 Archaeological Resources Protection Act of 1979; PL 101-601 Native American Graves Protection and Repatriation Act; PL 91-190 National Environmental Policy Act; as applicable to DNR HCP; 1971 Executive Order #11593 Protection and Enhancement of the Cultural Environment. • Use the DNR Planning and Tracking (P&T) System, which links the user to DNR's Total Resource Application Cross-Reference (TRAX) database system, prior to planning resource management activities to identify known Cultural Resources Sites, per DNR PR14-004-030 "Identifying Historic Sites". • When management activities involve or affect cultural resources, DNR will meet with the affected tribe(s) with the objective of agreeing to a plan for protecting the archeological or cultural value. (per WAC 2222-20-120) DNR will meet regularly with the affected tribe(s) to discuss plans or management activities per PO06-002 Tribal Relations Policy, January 16, 1991 and June 2, 1998) • On a government-to-government basis, develop an agreement with interested federally-recognized tribes who consider the Lake Whatcom area as part of their Usual and Accustomed Area (U&A). The development of such agreements shall begin within one year of the Board of Natural Resources approval of the landscape plan. The agreement shall: o Identify categories of cultural resources to be protected and specific protection requirements and/or guidelines for each category o Outline a consultation process, including review timelines, for state lands actions such as: ▪ Timber sales plans ▪ Road maintenance and abandonment plans (RMAPs) ▪ Land exchanges o Address consultation process for the development of, or changes to, DNR policies such as: ▪ DNR Forest Resource Plan ▪ Sustainable Harvest Calculation ▪ Commissioner policy(s) for working with tribes (Commissioner's Order) ▪ Forest Practices ▪ Other applicable policies o Address other strategies under the objectives of this landscape plan to assure that conflicts with the protection of cultural resources are either avoided or mitigated to the extent possible. o Address issues such as: ▪ Tribal access, including behind DNR-controlled gates, to cultural sites on state lands. ▪ Cultural materials with significant commercial market (e.g. cedar trees for totem poles, canoes, etc.) • Prior to implementation of the agreement described above, protection of traditional cultural resources identified during harvest planning will be guided

	by the protection needs and comments/recommendations in Table 5, Tribal Cultural Resources in the PDEIS Appendix D.
Objective 10	**Provide and facilitate tribal access to state managed lands for traditional cultural and religious practices and treaty guaranteed hunting and gathering.**
	Strategies: • Tribal access for hunting, fishing and gathering per Point Elliott Treaty of 1855 Section 5 Open and unclaimed lands. • On a government-to-government basis, develop an agreement that addresses tribal access (see government-to-government agreement under Objective 9 above).
Objective 11	**Create and implement a sustained yield model specific to the Lake Whatcom watershed that encompasses the revised management standards and that is consistent with the sustained yield established by the Board of Natural Resources.**
	Strategies: • The average rotation age is consistent with Forest Resource Plan policy as specified by site and species. • Harvest trees in dense stands (commercial thinning), before trees die from stand competition, to capture revenue that would otherwise be lost.
Objective 12	**Maintain or improve commercial forest productivity and health.**
	Strategies: • Select a harvest method (regeneration, thinning, partial cut) that maintains or facilitates establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction. • Following regeneration harvests, reforest with a majority of Douglas-fir intermixed with Western red cedar at all elevations in the planning area. • Pre-commercially thin overstocked stands. • During the first two decades of the plan, accelerate the harvest of mature and over-mature hardwood stands on sites better suited for conifers. • Control competing vegetation that would dominate crop trees or significantly inhibit growth in a stand.
Objective 13	**Cultivate higher value commercial forest products**.
	Strategies: • Plant and encourage growth of western redcedar to develop pole products. • Prune, to increase wood quality, where it will generate a higher economic return. • Consider tree selection during commercial thinning that promotes future log quality.
Objective 14	**Develop and maintain a transportation network that facilitates commercial management activities**.
	Strategies: • Develop and begin implementation of a Road Maintenance and Abandonment Plan within one year of the completion and approval of the landscape plan. • Use harvest system planning to identify necessary roads and reduce the total length of new road construction. • Pursue a viable alternative to the lower portion (sec. 6 & 7, T.37 N. R.4 E.) of the existing LM-2000 road as the primary timber haul route for harvests on Lookout Mountain. Maintain the existing road as needed for access to communication sites, fire access and administrative use. • Abandon roads to Forest Practices standards when they are no longer needed for management.

	• Install and maintain gates where necessary to reduce road maintenance costs, resource impacts, vandalism, and garbage dumping.
Objective 15	**Maintain and increase lease revenue from existing and future communication sites.**
	Strategies: • Continue to lease tower and building space to interested parties. • When possible, review rental rates. Increase rates if market conditions allow. • Seek new communication site customers.
Objective 16	**Consider opportunities to generate revenue from oil and gas exploration.**
	Strategies: • *Limit exploratory drill sites to surface locations outside the watershed. Subsurface diagonal drilling allowed.* • *If sufficient oil or gas reserves are found, allow development of the resource if compatible with other landscape objectives. Production drill sites shall be limited to surface locations outside the watershed. Subsurface diagonal drilling allowed.*
Objective 17	**Consider the marketing of special forest products such as evergreen boughs, salal greens, moss, and native plants, as appropriate.**
	Strategies: • Ensure potential products, if sold, will not negatively impact other resource objectives or traditional tribal use.
Objective 18	**Consider other revenue generating mechanisms.**

	Strategies:
	• Consider Lake Whatcom a preferred location for the following:
	  o Green certification
	  o Carbon sequestration
	  o Lease(s)
	  o Conservation easement
	  o Maintain long term public ownership of forest lands
	• Reconveyance
	• Exchange, transfer or sell trust lands.
	• Recreational fees.

Objective 19	**Manage dispersed, low impact recreation**.
	Strategies: • Public use and recreation is allowed in accordance with Policy No. PO10-002 (Public Use on DNR-Managed Trust Lands), provided resources and assets are not at risk. • As budget allows, develop a comprehensive recreation plan in cooperation with specific user groups such as the horseback riders, mountain bikers, hikers and other interested parties that minimizes impacts to trust resources and assets. • Limit access to streams, riparian areas, and wetlands by motorized vehicles through permanent road closures, vehicle barriers, and public education and enforcement.
Objective 20	**Reduce the visual impact of forest management activities in high visibility areas as shown on Map S-1.**
	Strategies: • Follow Forest Practice Regulations and Forest Resource Policy No. 32 (Green-up of Harvest Units), in conjunction with Policy No. 16 (Landscape

	Planning).
	• On all the state trust lands, including "moderate visibility" areas on Map S-1, the following guidelines will be used for even-aged harvest units:
	  o Harvest units will not exceed 100 acres except in the case of emergency salvage operations due to extensive "blowdown", insect or disease infestation, or public safety concern.
	  o No harvesting within 300 feet of another harvest area if combined acreage of harvest areas exceeds 100 acres
	  o Harvest units with trees greater than 4 feet high are considered "greened-up."
	• In "high visibility" areas on Map S-1, the department will consider the size, shape, and location of harvest units and distribution of leave trees when planning timber sales.
	• Disperse regeneration harvest activities temporally and spatially across the landscape.

Objective 21	**Support stewardship education opportunities and partnerships that address community needs.**
	Strategies: • Cooperate with and provide educational opportunities to requesting educational institutions and other interested parties consistent with the department's public use policy No. PO10–002. • DNR will continue to be an active participant in the Forest Practices Timber Fish Wildlife (TFW) process and the Lake Whatcom Forestry Forum.

Alternative 3 (Identical to PDEIS Alternative 3)

This alternative was developed by the Committee as one of a range of options presented during PDEIS expanded scoping. As requested by the Committee, this alternative has been included and analyzed in the DEIS along with the No Action and Preferred Alternatives.

Objective 1	**Ensure no significant risk to public health, safety and resources, and tribal archaeological and cultural resources from forest-management-related mass-wasting events.**
Mass-wasting	**Strategies:** • Timber harvest and road construction upon potentially unstable slopes (as defined in the "Slope Stability Assessment" and shown generally on PDEIS Map G-2 "Potentially Unstable Slopes") shall be carefully regulated. o Proposed activities on potentially unstable slopes shall be reviewed by the inter-jurisdictional committee who may make site specific recommendations. o Proposed activities on potentially unstable slopes will require on-site evaluation by a DNR specialist to determine actual unstable areas. o Potentially unstable slopes determined to be "unstable" based on this evaluation: • No road construction or timber harvesting will occur on areas identified during the above evaluation as unstable. • Leave a 140-foot edge buffer adjacent to areas identified as unstable. • Allow 20% thinning removal in the outer 50 feet of this edge buffer. o Potentially unstable areas not found to be "unstable" based on this evaluation (but shown on PDEIS Map G-2) • Allow thinning removals that retain over 50 percent of the timber stand by basal area on potentially unstable slopes. • Almost no roads will be located on potentially unstable slopes. o Road reconstruction on areas identified by the above evaluation as unstable will consider *inter-jurisdictional committee and* specialists recommendations. Almost no road reconstruction should occur on unstable slopes. o Timber harvesting or road construction outside of identified unstable areas, but within the mapped "potentially unstable slopes", will consider inter-jurisdictional committee and specialists recommendations. • *Slope stability assessment work generally identified "high hazard" and "moderate hazard" mass-wasting units (See PDEIS Map G-1) within the potentially unstable slopes areas. Watershed Analysis Areas of Resource Sensitivity #1 is rated "moderate hazard"; ARS #2, 3 and 4 are rated "high hazard."* o *Proposed activities on potentially unstable slopes shall be reviewed by the inter-jurisdictional committee, which may make site-specific recommendations.* o *Follow Lake Whatcom Watershed Analysis mass-wasting prescriptions relating to timber harvesting.* • In addition, leave a 140-foot edge buffer adjacent to ARS #1, 2, 3 and 4. • *Allow 20% thinning removal in the outer 50' of this buffer.* o *On unstable slopes in ARS #1, #2, #3 and #4 or areas identified as unstable above, new road construction shall be prohibited and old road reconstruction shall be limited.*

	○ Existing road reconstruction will follow Watershed Analysis road construction prescriptions in ARS #1, 2, 3 and 4. Almost no road reconstruction should occur on unstable slopes. • In Smith Creek, large woody debris, which increases the risk of log jams and resulting debris torrents, will be cut into chunks to reduce debris build up, to provide for public safety of downstream residents.[4]
Objective 2	**Maintain and restore the sediment regime within the range of natural variability**.
Roads & sediments	***Strategies:*** • Follow Forest Practice Rules and watershed analysis prescriptions for road construction and maintenance in those areas allowed under this alternative, with one exception: stream crossings of Type 1-4 streams will only be allowed by concurrence with the inter-jurisdictional committee. ○ No road construction during "wet conditions" (typically Nov. 1 – March 31) unless the contractor can demonstrate that protection of resources can be provided. • Minimize new road construction using harvest systems planning • No timber and rock hauling during "wet conditions" on DNR forest roads without surfacing or surfaced with non-durable rock, where sediment has the potential to deliver to streams. • Develop and begin implementation of a road maintenance and abandonment plan based on the specifications in WAC-222-24-050 and 051, within one year of the completion and approval of the landscape plan. ○ All orphaned roads will be inventoried and assessed relative to risk of failure and/or potential for sediment delivery. Mitigation work on orphaned roads will be done where a clear risk to public safety or potential for resource damage exists and accessing the site will not cause greater resource damage or public risk. ○ Treat (abandon and/or reduce to low risk) all roads and orphaned roads that are high hazard to public safety and resource damage within three (3) years of approval of the landscape plan.
Objective 3	**Protect and restore riparian and wetland habitat to sustain healthy native aquatic, wetland, and riparian ecosystems**.
RMZs	***Strategies:*** • Establish riparian management zones along all streams while planning management activities. Manage lands within such zones to protect water quality and riparian habitat. Activities proposed within riparian management zones and wetlands shall be reviewed by the inter-jurisdictional committee, which may make site-specific recommendations. ○ Type 1 and 2 waters shall have a designated riparian management zone of 250 feet. ○ Type 3 waters shall have a designated riparian management zone of 200 feet ○ Type 4 and 5 waters shall have a designated riparian management zone of 150 feet. ○ No timber harvests shall occur in Type 1 though *5* riparian management zones except as needed for roads and yarding corridors. Yarding corridors must constitute less than five (5) percent of the stream length. Only full-suspension yarding is allowed in these corridors. Trees cut for yarding corridors through type 5 riparian management zones shall be retained as down wood. ○ The riparian management zone distance will be measured horizontally from the outer edge of the 100-year flood plain. ○ The width of the riparian management zone shall be increased to include an outer wind buffer in areas prone to wind-throw. Where

[4] This strategy is based on a negotiated legal settlement between DNR and residents in this area.

	there is at least a moderate potential for windthrow, wind buffers shall be 140 feet wide on all streams. Thinning up to 20 percent of the timber volume is allowed in the outer 50 feet of the wind buffer.
Wetlands	***Strategies:*** • For all wetlands ¼ acre in size or greater, provide a buffer equal to the site potential tree height of a tree at age 200. • No timber harvest shall occur in the wetland nor in the inner first half (by distance) of the wetland buffer. Up to 20% timber thinning removal may occur in the outer half of the wetland buffer. • For wetlands less than ¼ acre, clump leave trees in the wetland.
Objective 4	**Maintain and restore the forest hydraulic regime for each sub-basin within the range of natural variability**.
Hydrologic maturity	***Strategies:*** • In each sub-basin, as these are defined in the Watershed Analysis, maintain at least 50% of the forested acres in the sub-basin at greater than 60 years of age.
Objective 5	**Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems**.
Chemicals	***Strategies:*** • Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation). Use the following prioritized application methods: 1) no treatment, 2) non-chemical, and 3) ground-applied, No aerially-applied chemicals may be used (chemicals include dust abatement, insecticides, pesticides, or fertilizers). Select a cost effective method by considering the no treatment method first and then move sequentially down the list. • Follow Forest Practice Rules and Forest Resource Plan Policy No. 33 (Controlling Competing Vegetation) and 34 (Thinning, Fertilizing, and Pruning). Use prioritized application method listed in the strategy above. No aerially-applied chemicals may be used (chemicals include dust abatement, insecticides, pesticides, or fertilizers)
Objective 6	**Maintain and restore a diversity of natural and managed functional habitat conditions to benefit native fish and wildlife species, particularly those identified in WDFW priority and habitat species (PHS).**
Fish habitat Older-forest conditions PHS Species	***Strategies:*** • Ensure all native fish species have access throughout their natural range at all life stages. o Identify, prioritize, and replace fish-blocking culverts with fish-passage structures. Replacement will occur during planned management activities or during implementation of the Road Maintenance & Abandonment Plan. Complete all this fish passage work within three (3) years after approval of the landscape plan. • Retain riparian and wetland buffers and off-base unstable slope areas in older forest conditions, letting those not in that condition yet to grow into it. • Manage the forest that is on-base for 140-year average rotation age. • For all wildlife species and uncommon habitats that have guidelines stated within the Washington Department of Fish and Wildlife's Priority Habitats and Species Management Guidelines, inventory and protect all existing suitable habitat according to those guidelines. For those priority habitats and species that have no guidelines, consult with the DNR region, tribal, and WDFW biologist. Habitats of concern include but are not limited to: o Bald eagle nesting, roosting and foraging sites. o Marbled murrelet habitat. o Common Loon

	○ Northern Goshawk ○ Pileated Woodpecker ○ Cliffs ○ Talus Fields ○ Caves ○ Balds Protect locally rare or uncommon native vegetative communities within the watershed that exhibit a combination of distinct age structure, species composition, structural diversity, or high wildlife value as identified in the assessment (e.g., the 100-year-old big-leaf maple stand). Determine protection measures by consultation with DNR region, affected tribes, and WDFW.
Objective 7	**Permanently retain green trees, snags, & down logs to support mature forest functions**.
Snags, green trees, down wood	***Strategies:*** • Permanently retain 25% of the trees by basal area in any harvest unit. ○ Emphasize retention of all existing snags, where safe and practicable. (These count toward the 25%). ○ Retain all existing down logs.
Objective 8	**Maintain or increase soil productivity and health**.
Snags Harvest methods	***Strategies:*** • Implement the strategies for snag and green tree retention above. • Select harvest methods that maintain or facilitate establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction.
Objective 9	**Preserve, protect, and restore significant historic, archeological, traditional current use and cultural resources.**
	Strategies: • Identify and protect cultural resources using the following DNR policies, procedures, and guidelines, as well as state and federal acts, rules, regulations, accords, agreements, and executive orders, where applicable. ○ **Implement DNR Policy P006-001 <u>Historical, Cultural and Archaeological Sites</u>, 7/31/96: "**All department personnel will identify potential archaeological, historic and cultural sites/resources in the course of their normal duties. Discovered resources will be recorded and inventoried in coordination with the Office of Archaeological and Historic Preservation (OAHP) and/or the appropriate Tribes so that they can be protected to the full extent allowable by law. ○ It is the policy of the department that Forest Resource Plan Policy #24 "Identifying Historic Sites," shall apply to all department managed lands. That policy states "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level, which, at a minimum, meets regulatory requirements…." ○ **DNR Tribal Policy PO06-002, Jan. 16, 1991** as referenced in Appendix F of the 1992 Forest Resource Plan, in PO06-001, and as reflected in the Revised DNR Tribal Policy, June 1998. ○ **1992 DNR Forest Resource Plan: Policy #8 "**Special Forest Products"; **Policy #13 "**Special Ecological Features"; **Policy #16 "**Landscape Planning"; **Policy #19 "**Watershed Analysis"; **Implement Policy #24: "**Historic and Archaeological Sites": "The department will establish a program to identify and inventory historic and archaeological sites and protect them at a level which, at a

minimum, meets regulatory requirements." **Policy #28 "**Developing and Maintaining Roads"**; Policy #35 "**Implementation Policies: Public Involvement": **"**The department will solicit comment from the public, tribes, and government agencies when implementing the Forest Resource Plan and when revising policies contained in the document."

- **DNR Forestry Handbook Procedures:** PR 14-004-030 "Identifying Historic Sites"; PR 14-004-010 "Identifying Off-base Lands"; PR 14-004-110 "Wetland Management".
- **DNR Final Habitat Conservation Plan** (September 1997) and by reference: **(1) DNR DEIS** (March 22, 1996), 4.9 Cultural Resources, pgs. 4-525-4-528; and **(2) DNR HCP FEIS** (October 25, 1996), p. 3-121 C. Cultural.
- **Washington State Rules, Regulations, Agreements:** RCW 27.34 Archaeological and Historic Preservation**;** RCW 27.44 Indian Graves and Records; RCW 27.53 Archaeological Sites and Resources Act; RCW 43.21C.020 & WAC 197-11 State Environmental Policy Act; RCW 25 Office of Archaeology and Historic Preservation; RCW 76.09 Forest Practices Act; WAC 222 Forest Practices Rules; 1999 Forest & Fish Plan Appendices G: Cultural Resource Module, N2: DNR Cultural Resources Planning, O:Cultural Resources Management & Protection Plan; 1987 TFW Agreement; 1989 Centennial Accord.
- **Federal Regulations/Laws/Executive Orders:** 36 CFR Part 800 Protection of Historic Properties; 42 U.S.C. AIRFA American Indian Religious Freedom Act; 33 U.S.C Clean Water Act; 16 USC Endangered Species Act; Title 16 U.S.C 1906 Antiquities Act; Title 16 U.S.C., PL 96-95 Archaeological Resources Protection Act of 1979; PL 101-601 Native American Graves Protection and Repatriation Act; PL 91-190 National Environmental Policy Act, as applicable to DNR HCP; 1971 Executive Order #11593 Protection and Enhancement of the Cultural Environment.
- **Lummi Nation Code of Laws Title 40 Cultural Resources Preservation Code; Lummi Resolutions 92-124 & 125** .

- Use the DNR Planning and Tracking (P&T) System, which links the user to DNR's Total Resource Application Cross-Reference (TRAX) database system, prior to planning resource management activities to identify known Cultural Resources Sites, per DNR PR14-004-030 "Identifying Historic Sites."

- DNR and the affected Tribes will develop a Cultural Resource Management Plan (CRMP), in consultation with the Office of Archaeology and Historic Preservation, that implements the Protection Needs and Comments/Recommendations columns in the Cultural Resource Matrix (Table5)[5], the 1987 Timber, Fish, and Wildlife Agreement on Archaeological and Cultural Resources, and DNR policy P006-001. The CRMP will be completed and implemented within 1-year following adoption of the landscape plan.
  - When management activities involve or affect cultural resources, DNR will meet with the affected tribe(s) with the objective of agreeing to a plan for protecting the archeological or cultural value. (per WAC 2222-20-120)

- Prior to implementation of the completed CRMP, DNR will consult with affected Tribes during timber harvest planning, as specified in a MOU, MOA, or other formalized agreement signed by DNR and the affected Tribes prior to implementation of the landscape plan. Protection of Traditional Cultural Properties identified during timber harvest planning will follow the Protection Needs and Comments/Recommendations columns in the Cultural Resource Matrix (Table5).
  - DNR will meet regularly with the affected tribe(s) to discuss plans or management activities per PO06-002 Tribal Relations Policy, January 16, 1991 and June 2, 1998)

[5] The Cultural Resource Matrix (Table 5) is located in Appendix D.

Objective 10	**Provide and facilitate tribal access to state managed lands for traditional cultural and religious practices and treaty guaranteed hunting and gathering.**

Tribal access	***Strategies:***
	• Tribal access for hunting, fishing and gathering per Point Elliott Treaty of 1855 Section 5 Open and unclaimed lands.
	  o Prior to implementation of the landscape plan, develop a Memorandum of Understanding (MOU) with affected Tribes regarding physical access for tribal members to state managed lands for traditional cultural and religious practices, and tribal ceremonial gathering and hunting.
	  o Include Tribes in pre- and post- harvest planning, provide information sharing and access to do traditional practices.
	  o Consult with Tribal staff during the development of the Lake Whatcom road maintenance and abandonment plan.

Objective 11	**Create and implement a sustained yield model specific to the Lake Whatcom watershed that encompasses the revised management standards and that is consistent with the sustained yield established by the Board of Natural Resources.**
	Strategies: • Forest management rotation age will average 140 years. • Harvest trees in dense stands (commercial thinning), before trees die from stand competition, to capture revenue that would otherwise be lost.
Objective 12	**Maintain or improve commercial forest productivity and health.**
	Strategies: • Select a harvest method that maintains or facilitates establishment of productive and healthy forest stands. • Avoid using ground-based harvesting systems on slopes exceeding 30% and on soils sensitive to compaction. • Following regeneration harvests, reforest with a majority of Douglas-fir intermixed with Western redcedar at all elevations in the planning area. Where appropriate, rely on natural regeneration. • Pre-commercially thin overstocked stands. • During the first two decades of the plan, accelerate the harvest of mature and over-mature hardwood stands on sites better suited for conifers. • Control competing vegetation that would dominate crop trees or significantly inhibit growth in a stand.
Objective 13	**Cultivate higher value commercial forest products**.
	Strategies: • Plant and encourage growth of western redcedar to develop pole products. • Prune, to increase wood quality, where it will generate a higher economic return. • Consider tree selection during commercial thinning that promotes future log quality.
Objective 14	**Develop and maintain a transportation network that facilitates commercial management activities**.
	Strategies: • Develop and begin implementation of a Road Maintenance and Abandonment Plan within one year of the completion and approval of the landscape plan. • Use harvest system planning to identify necessary roads and reduce the total length of new road construction. • Abandon roads to Forest Practices standards when they are no longer needed for management. • Install and maintain gates where necessary to reduce road maintenance costs, resource impacts, vandalism, and garbage dumping.

Objective 15	**Maintain and increase lease revenue from existing and future communication sites.**
	Strategies: • Continue to lease tower and building space to interested parties. • When possible, review rental rates. Increase rates if market conditions allow. • Seek new communication site customers.
Objective 16	**Consider opportunities to generate revenue from oil and gas exploration.**
	Strategies: • ***Limit exploratory drill sites to surface locations outside the watershed. Subsurface diagonal drilling allowed.*** • If sufficient oil or gas reserves are found, allow development of the resource if compatible with other landscape objectives.
Objective 17	**Consider the marketing of special forest products such as evergreen boughs, salal greens, moss, and native plants, as appropriate.**
	Strategies: • Ensure potential products, if sold, will not negatively impact other resource objectives or traditional tribal use.
Objective 18	**Consider other revenue generating mechanisms.**
	Strategies: • Green certification • Carbon sequestration • Lease(s) • Conservation easement • Reconveyance • Exchange or sell trust lands *consistent with the respective alternative*. • *Recreational fees.*
Objective 19	**Manage dispersed, low impact recreation**.
	Strategies: • Public use and recreation is allowed in accordance with Policy No. PO10-002 (Public Use on DNR-Managed Trust Lands), provided resources and assets are not at risk. o Consult with tribal staff to ensure that the DNR's public use policy is consistent with Objectives 9 and 10. • As budget allows, develop a comprehensive recreation plan in cooperation with specific user groups such as the horseback riders, mountain bikers, hikers and other interested parties that minimizes impacts to trust resources and assets. • Limit access to streams, riparian areas, and wetlands by motorized vehicles through permanent road closures, vehicle barriers, and public education and enforcement.

Objective 20	**Reduce the visual impact of forest management activities in high visibility areas as shown on (PDEIS) Map S-1.**
	Strategies: • Follow Forest Practice Regulations and Forest Resource Policy No. 32 (Green-up of Harvest Units), in conjunction with Policy No. 16 (Landscape Planning). • On all the state trust lands, including "moderate visibility" areas on Map S-1, the following guidelines will be used for even-aged harvest units: o Harvest units will not exceed 100 acres except in the case of emergency salvage operations due to extensive "blowdown", insect or disease infestation, or public safety concern. o No harvesting within 300 feet of another harvest area if combined acreage of harvest areas exceeds 100 acres o Harvest units with trees greater than 4 feet high are considered "greened-up." In "high visibility" areas on Map S-1, the department will consider the size, shape, and location of harvest units and distribution of leave trees when planning timber sales
Objective 21	**Support stewardship education opportunities and partnerships that address community needs.**
	Strategies: • Cooperate with and provide educational opportunities to requesting educational institutions and other interested parties consistent with the department's public use policy No. PO10–002. • DNR will continue to be an active participant in the Forest Practices Timber Fish Wildlife (TFW) process and the Lake Whatcom Forestry Forum.

Summary and Comparison of Alternatives

No Action Alternative

Areas of state trust lands specially constrained under the No Action Alternative are shown on Map DEIS 1 on the next page.

The No Action Alternative incorporates DNR's existing policies, procedures, legal requirements and management commitments, including but not limited to the Forest Resource Plan, the Forest Practices Rules (including Watershed Analysis Prescriptions) and HCP.

Earth: Road construction and timber harvest have the potential to trigger localized debris slides, with associated impacts, such as increased sediment delivery to streams. Timber harvest could affect slope stability by influencing root structure and the amount of water that enters the soil. Decreases in root structure and/or increases in soil-water may be significant at a specific site, and depending on topography, geology, soils and vegetation, could lead to slope failures and increased sedimentation. The likelihood of these potential impacts to occur would be substantially mitigated by adherence to Watershed Analysis prescriptions. The prescriptions prohibit road construction on the steeper and most slope stability-sensitive areas, and they specify construction practices designed to prevent slope failures that could significantly impact water quality, fish habitat or public facilities.

No probable significant impacts to slope stability would be expected as a result of implementing the No Action Alternative. Road construction and timber harvesting must comply with the Lake Whatcom Watershed Analysis Prescriptions that were designed to prevent slope failures that could create significant impacts, the rest of the Forest Practices Rules, DNR's HCP requirements and soil protection provisions of timber sales contracts.

Air: There are no significant impacts to air quality under the No Action Alternative. Timber harvest, silvicultural activities and road building may cause short-term dust. Fires, though historically rare, may cause smoke for the duration of the incident.

Water: Timber harvesting has the potential to affect water quality in respect to sediment, temperature and nutrients. The 1997 Lake Whatcom Watershed Analysis, reflecting all ownerships in the watershed, indicates sediment yields are above background levels, shade requirements aren't being met on about 25 percent of the stream miles and nutrient concentrations are low. It can be assumed that some improvements in each category are needed on state trust lands though data are not tracked by ownership. The No Action Alternative provides for management under the HCP and recent changes in forest practices regulations, which over time should result in positive changes to the forest condition and water quality. Specific thresholds of hydrologic maturity have been prescribed for the Smith Creek and Olsen Creek sub-basins. At the proposed rate of regeneration harvest under this alternative the proportion of area in a hydrologically mature condition would not be less than 77 percent if harvest were evenly distributed throughout the planning area. Mitigating measures for protecting stream water quality will also benefit the water quality

Lake Whatcom Landscape Plan

DEIS No Action Alternative

Legend

No Action Alternative

- Lake Whatcom Landscape Boundary
- Streams
- Roads
- Lake Whatcom
- Mass Wasting
- Riparian Buffer
- Wind Buffer — Wind buffers shown are computer generated. In practice, they would be placed on the side of the stream with prevailing winds.
- DNR Managed Forest Land

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of the lake. While some marginal increase in water yield is unavoidable, Watershed Analysis Prescriptions and harvest system planning should mitigate the potential for negative impacts.

Plants and Animals: Approximately 50 years from now the landscape will have transformed from a forest ecosystem in which the dominant forest development stage would be 40-70 years old to one with a dominant age class of more than 70 years. In 100 years about 30 percent of the forest would be more than 150 years old, compared with about one percent today. Because of the low number of acres harvested each year, the presence of young stands would decrease across the landscape. Over the long-term, the No Action Alternative should also result in an increase in structural components such as snags and downed wood over the landscape. There is no identified risk to rare or sensitive plants.

Under all the alternatives, including the No Action Alternative, there would be a long-term trend for wildlife species abundance and diversity to vary over time because of naturally occurring vegetative succession. Moving to forests dominated by older stands would favor species associated with older forest conditions, with dramatic reductions in species associated with early seral stages and some decline in species dependent on mid-seral forest stages. Short-term direct impacts of the No Action Alternative would include the removal of forest cover (loss of habitat) in areas of regeneration harvest and road construction, decreased habitat for some species of neotropical migratory birds with rapid reduction of mature hardwood stands, and the creation of barriers to movement and dispersal for some wildlife species.

Riparian and wetland ecosystems are largely protected by DNR's HCP, Forest Practices Rules and Watershed Analysis Prescriptions. Type 5 streams and small wetlands (less than one quarter acre) are not specifically protected under the No Action Alternative, but Type 5 waters benefit from unstable slope protection provided under this alternative. Protection of Type 5 waters, to reduce the possibility of adverse impacts to fish habitat, is being studied as part of DNR's HCP agreement.

Under the No Action Alternative approximately 62 miles of road would be constructed over time, and the permanent active road network would be about 41 miles in length. The number of miles to be abandoned will be determined through a Road Maintenance and Abandonment Plan. The portions of the planning area that would be most significantly impacted by road construction would include the middle-western, southwestern, and eastern (mid) portions, where there is currently contiguous mature forest with few roads. The eastern (mid) portion would likely be the most significantly altered, as a couple of main roads with spurs are planned in a currently unroaded area. This would introduce "road" and "edge" effect, and would particularly affect interior forest-associated species.

The No Action Alternative provides the greatest capacity for preventing and responding to forest insect and disease epidemics in the Lake Whatcom landscape, while also emphasizing the positive role insects and disease can play in correcting snag and coarse wood debris deficiencies.

Energy: While there is the potential for future coal development within the landscape planning area currently there is little demand or interest. Oil and gas lease requests are limited; recent oil and gas leases have required directional drilling from non-trust parcels. There is no potential for

hydropower on state trust lands in the Lake Whatcom landscape. There are no impacts from energy resources.

Minerals: Impacts from sand, gravel and rock pits are minimal, and there are no impacts from mining metallic minerals. There is currently only one borrow pit on DNR-managed land within the landscape planning area. The gravel and rock resources are not desirable as construction materials, and the potential for commercial sales and operation on state land is very limited. There are no known or reported metallic mineral deposits in or near the Lake Whatcom management area.

Timber Resources
Seventy-two percent of the state trust lands in the landscape, or 11,390 acres, are available for harvest, and the average rotation age is at least 60 years. Under the No Action Alternative options for access to stands is greatest, which provides the broadest selection of logging methods. This alternative also makes the most acreage available for harvest of special forest products. Vehicular access to harvest sites is maximized under this alternative. Cumulative impacts on timber harvest are shown in Table 6 under the Summary and Comparison of Impacts.

Carbon Sequestration: See the Comparison of Impacts and DEIS Appendix D for a more complete discussion of carbon sequestration. Forests sequester carbon by storing carbon in the forest (stems, foliage, litter, roots, soil) and in products produced from the forest. Carbon stored in forests and forest products can offset carbon emissions through biomass conversion to energy uses which displace the use of fossil fuel and through product substitution for fossil-intensive products. The No Action Alternative is the most favorable of the three management alternatives in the Lake Whatcom landscape in terms of aggregate net carbon storage, even though the amount of stored forest carbon may increase under the other two alternatives.

Environmental Health: No significant adverse health impacts were identified. There is risk to downstream structures and residents on alluvial fans from debris-flow events. While DNR mitigates for potential slope failure in planning and conducting harvest and road construction, debris-flow events are part of the natural system even in unmanaged parts of the landscape.

Land and Shoreline Use: The lands within the watershed under DNR management will continue to be used for forestry. The No Action Alternative supports all silvicultural activities as allowed by federal and state laws, Forest Resource Plan policies, the DNR HCP and other policies and management guidelines approved by the Board of Natural Resources. Many other provisions (e.g., riparian areas, unstable slope protection, etc.) will soften the visual impacts of harvest, though some aesthetic impacts will occur. Some of these could be mitigated through site-specific harvest design features. No change is expected relative to dispersed recreation within the landscape.

Cultural Resources: Under the No Action Alternative, DNR would continue to follow recently instituted internal procedures for protection of cultural resources in the Lake Whatcom planning area. DNR asks tribes to list areas for which they wish to receive forest practices applications (FPAs) for review and sends the tribes electronic notices of FPAs in those areas; the tribes identify lands that contain cultural, historic or archaeological resources and DNR meet with them to plan for protection of archaeological or cultural values in the area. Known archaeological and

historic sites that have been recorded with OAHP would receive more protection than non-recorded and unknown sites under the No Action Alternative; all unknown sites would be at some risk of damage.

Transportation: Under the No Action Alternative approximately 62 miles of road would be constructed over time, and the permanent active road network would be about 41 miles in length. The number of miles of road to be abandoned would be determined after completion of a Road Maintenance and Abandonment Plan. Road maintenance and abandonment of unneeded or orphaned roads will reduce the risk of environmental impacts. (Orphaned roads are roads or railroad grades not used since 1974, sometimes overgrown with trees and generally inaccessible to vehicles.) Sections of this DEIS concerning the Affected Environment and the Alternatives discuss the potential impacts of roads on mass-wasting, sediment delivery, fish habitat and wildlife habitat. However, DNR's HCP and the Forest Practices Rules contain specific requirements related to road construction and maintenance to avoid and mitigate these potential impacts. The rationale for these fairly recently mandated practices were based on best available science; the environmental benefits will need more time to become evident across the landscape.

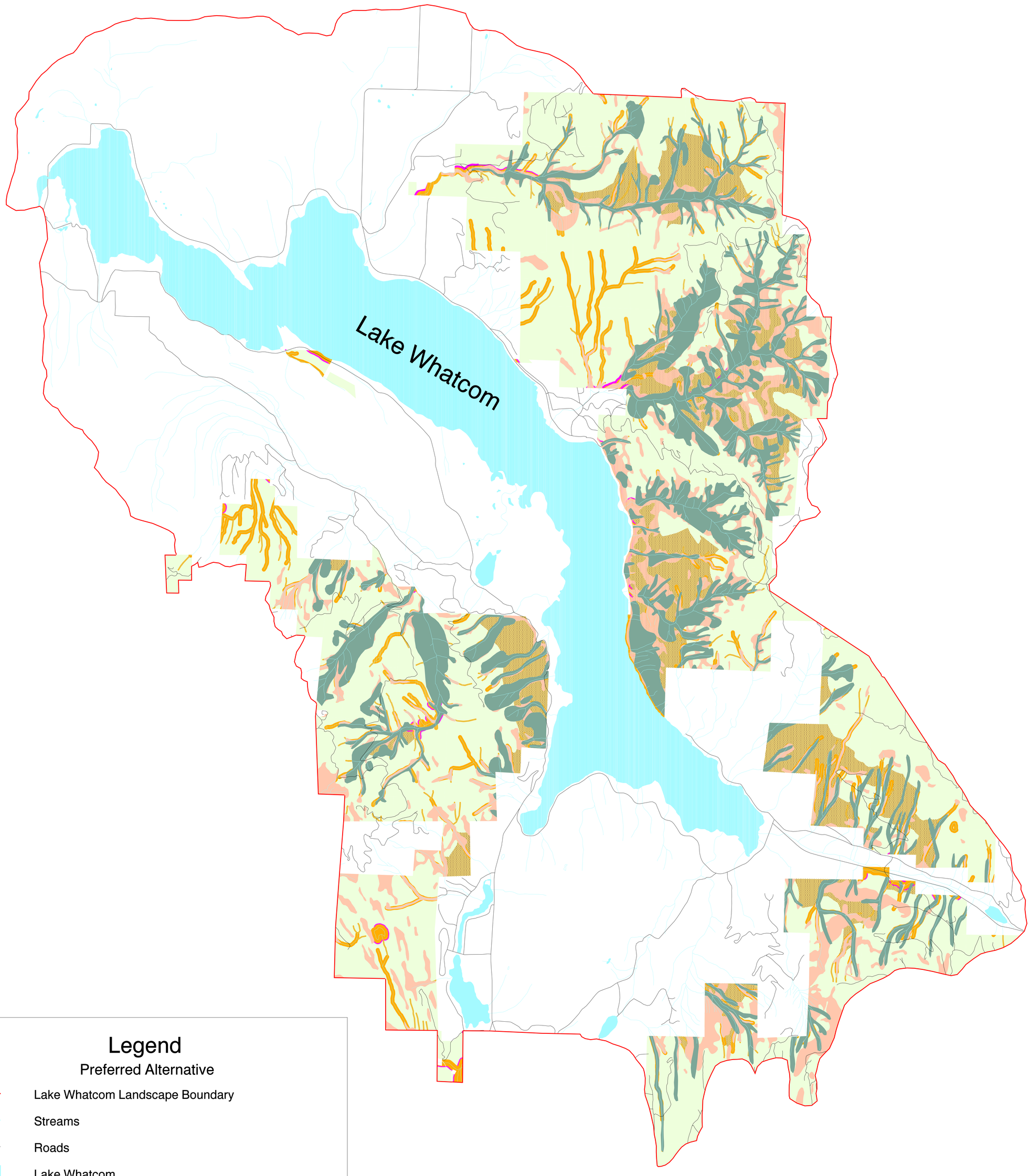
Public Services and Utilities: Revenues from these lands support public services and facilities construction, including the K-12 school construction fund. Under the No Action Alternative projected undiscounted revenues would total $337,392,000 over the entire planning period. This alternative devotes more than 50 percent of the land's productive capacity for ecological and social benefits (Hulsey, 2002; see PDEIS Appendix D). Because of the land use there are no impacts to police, recreational facilities, water/storm water management, sewer/solid waste management or other government services or facilities.

Preferred Alternative

This alternative was developed in a consensus process by DNR and the Committee. Areas of state trust lands specially constrained under the Preferred Alternative are shown on Map DEIS 2 on the next page. The Preferred Alternative incorporates the legislative requirements in E2SSB 6731 as well as all of the requirements of the No Action Alternative. In addition, under the Preferred Alternative DNR commits to reaching a government-to-government agreement for cultural resources protection and tribal access, completing road maintenance and abandonment work within four years of approval of the Lake Whatcom Landscape Plan by the Board of Natural Resources, no aerial application of herbicides and fertilizer, and pursuing an alternative haul route for timber harvests on

Lake Whatcom Landscape Plan

DEIS Preferred Alternative



Legend

Preferred Alternative

- Lake Whatcom Landscape Boundary
- Streams
- Roads
- Lake Whatcom
- Mass Wasting
- Potentially Unstable Slopes
- Riparian Buffer
- Wind Buffer — Wind buffers shown are computer generated. In practice, they would be placed on the side of the stream with prevailing winds.
- Potentially Inaccessible Areas
- DNR Managed Forest Land

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Lookout Mountain. The summary below addresses those topics where meaningful differences are expected:

Earth: The nature of potential impacts would be similar to the No Action Alternative. However, the likelihood of such impacts occurring would be reduced by more restrictive slope stability protection strategies and substantial reductions in total miles of road to be constructed (30 percent) and acres of timber to be harvested (27 percent). No roads would be constructed on unstable slopes and very little would be constructed on potentially unstable slopes. The potential for surface erosion would remain insignificant under this alternative, but would be reduced slightly more from the No Action Alternative. The potential for cumulative impacts would be reduced from the No Action Alternative. Most of the sediment deliverable to public resources would originate from existing roads, and these adverse impacts are not considered to be significant.

Water: The Preferred Alternative adds mitigation measures that protect water quality, such as riparian buffers on Type 5 streams. Under this alternative, no road construction and limited reconstruction of existing roads will be allowed on slopes determined to be unstable, reducing further the risk of sedimentation of surface waters because of mass wasting. The potential for impacts from roads may be reduced because about a third fewer road miles will be constructed than under the No Action Alternative. The preferred alternative eliminates any risk of accidental contamination of waters by prohibiting aerial application of chemicals. The regeneration harvest level for the Preferred Alternative will maintain average hydrologic maturity at approximately 90 percent of the forested land. Therefore there will be no measurable or significant impacts on water yield or peak flows. The risk of sediment and phosphorus loading above natural background levels into Lake Whatcom is less under the Preferred Alternative than under the No Action Alternative.

Plants and Animals: In the first several decades there would be little observable difference in stand conditions between the No Action Alternative and the Preferred Alternative. Compared to Alternative 3, the Preferred Alternative would have less structural diversity on harvested units, as Alternative 3 employs heavy thinning as opposed to regeneration harvests. By 100 years, there would be half as much forest in the younger age classes under the Preferred Alternative as compared to the No Action Alternative. The highest age classes are better represented in the Preferred Alternative, with 14 percent more area in the fully functional class, compared to the No Action Alternative. Cumulative impacts are related to frequency of entry into the stands, and are unlikely to be much different from the No Action Alternative.

The Preferred Alternative will likely result in increased forest insect and disease activity relative to the No Action Alternative due to the general maturation of the forest and reduced opportunity to enter and manipulate tree vigor and stand composition (approximately 95 acres treated per year vs. approximately 150 acres).

Short-term impacts to wildlife would be similar to those under the No Action Alternative, with the exception of fewer road impacts (as a result of less road construction and regeneration harvesting, along with restrictions in areas where these would occur). The Preferred Alternative would retain more undisturbed areas for species associated with older, interior species, while leading to a greater reduction of younger forest stage habitats required by some species. The

same species protection provided under the No Action Alternative applies under the Preferred Alternative.

This alternative is more protective of riparian ecosystem function than the No Action Alternative because it does not allow harvest in a Type 5 RMZ except for roads and yarding corridors. However, harvesting in any RMZ under either the No Action Alternative or the Preferred Alternative would be consistent with the principles and requirements of DNR's HCP.

Timber Resources:
The Preferred Alternative makes 53 percent of the state trust lands in the landscape, or 8,276 acres, available for harvest. The annual harvest is projected at about half of that under the No Action Alternative. The average rotation age would be 60 years, identical to the No Action Alternative. Lack of vehicular access to some areas would reduce logging method options. Portions of the project area would be inaccessible to harvest, because of lack of landings suitable for helicopter operations. The average site index of lands available for harvest would be slightly reduced. Douglas-fir dominant stands would continue to be maintained. The availability of red alder of commercial size would decrease over time and stands with higher levels of hemlock and cedar would increase.

Cumulative impacts are shown in Table 6.

Carbon Sequestration: See the Comparison of Alternatives and DEIS Appendix D for a more complete discussion of carbon sequestration. The Preferred Alternative would likely be less favorable for sequestering carbon than the No Action Alternative. Though the average rotation age under these alternatives is identical, the number of acres available for harvest is lower under the Preferred Alternative. With reduced harvest activity there will be fewer young trees, which store more carbon than older trees on an annual basis, though the amount of stored forest carbon may increase over time beyond what is captured in the No Action Alternative.

Environmental Health: As with the No Action Alternative, no significant adverse health impacts were identified. The potential for impacts would be reduced further because no road construction would occur on unstable slopes and almost no construction would occur on potentially unstable slopes. Further, timber harvest acreage would be reduced and harvesting on potentially unstable slopes could occur only after on-site evaluation by a DNR slope stability specialist and review by the interjurisdictional committee.

Land and Shoreline Use: Many provisions of the Preferred Alternative (e.g., riparian areas, unstable slope protection, etc.) will soften the visual impacts of harvest, though some aesthetic impacts will occur. Some of these could be mitigated through site-specific harvest design features. No change is expected relative to dispersed recreation within the landscape.

Cultural Resources: Cultural resource protection and tribal access will be addressed through tribal agreements rather than on a case-by-case basis. However unknown archaeological and historic sites still would be at some risk of damage.

Transportation: Approximately 43 miles of road would be constructed under the Preferred Alternative. If averaged equally over a 60 year rotation, just over 7 miles would be built in the

first decade. After abandonment of existing and constructed roads that are not needed for long-term use, a total of 35 miles could be expected to remain as permanent active roads. No new road construction on unstable slopes and required review of proposed roads on potentially unstable slopes by a specialist would likely reduce long-term maintenance needs and reduce risk of slides and sedimentation. The number of miles of road to be abandoned will be determined after completion of a Road Maintenance and Abandonment Plan.

Public Services and Utilities: The Preferred Alternative would provide a projected $177,210,000 in total undiscounted revenue for local counties and state school construction over the entire planning period. This alternative dedicates 75 percent of the land"s productive capacity for ecological and social benefits, compared to more than 50 percent in the No Action Alternative and 90 percent under Alternative 3.

PDEIS Alternative 3

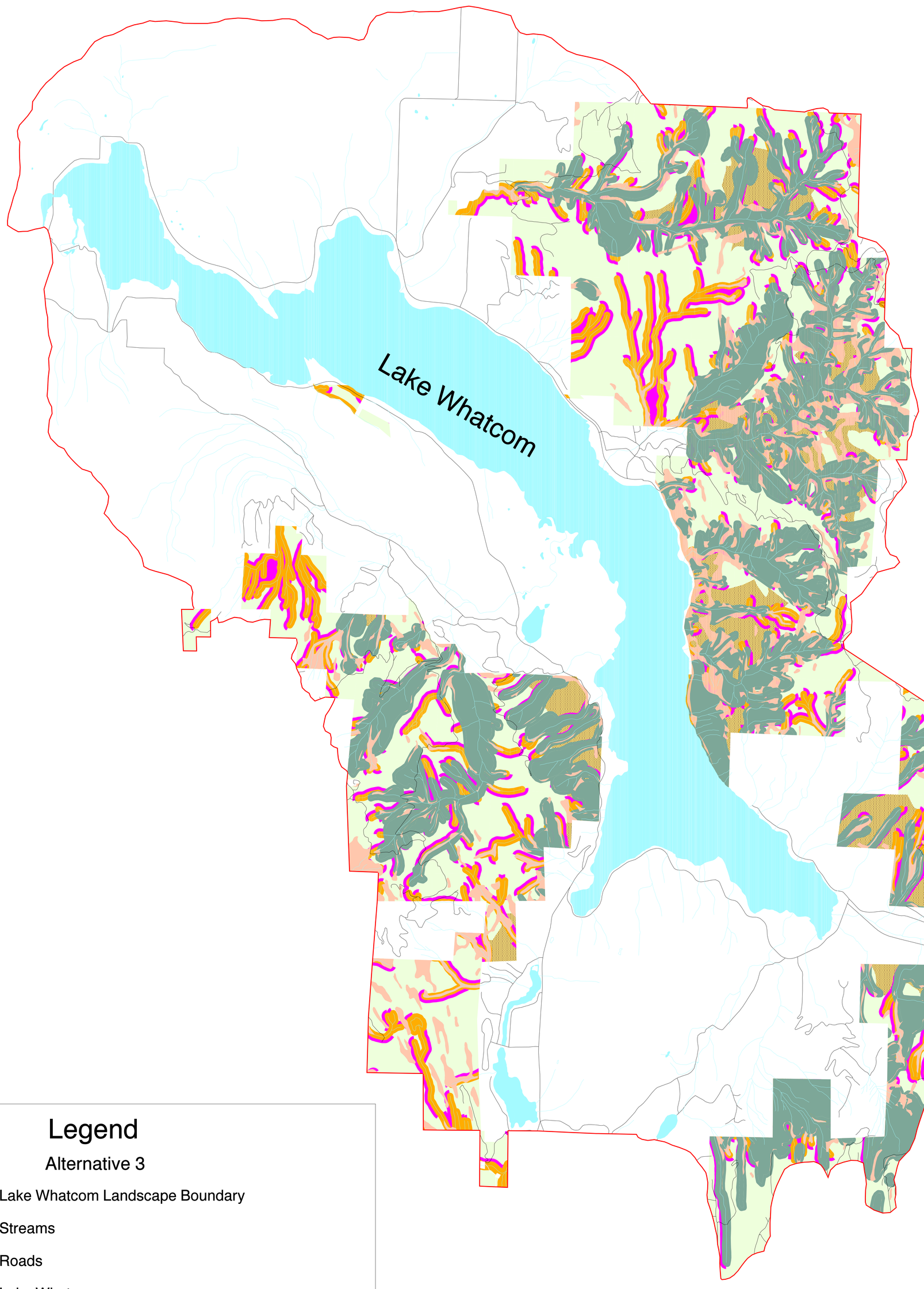
Areas of state trust lands specially constrained under Alternative 3 are shown on Map DEIS 3 on the next page. Alternative 3 was carried forward from the PDEIS at the request of the Committee in order to bracket the range of options evaluated in the DEIS. Alternative 3 is more restrictive than the other two alternatives, designating 67 percent of the landscape in special protection status, increasing the size of riparian buffers, and increasing snag and green tree retention. The summary below addresses those topics where meaningful differences are expected:

Earth: The overall impacts on slope stability would be less than under the No Action or Preferred alternatives. Surface erosion from exposed slopes associated with road construction would be further reduced. The probability for slope failures to result from harvest-related loss of root strength and/or changes in soil-water input on unstable and potentially unstable slopes would be virtually eliminated under this alternative. This very low risk would be a reduction compared to the No Action Alternative but only a minimal reduction from the Preferred Alternative. Cumulative impacts from implementing Alternative 3 would be reduced from the No Action Alternative but only minimally different from the Preferred Alternative. As with the two previous alternatives, no probable significant impacts to slope stability would be expected as a result of implementing Alternative 3.

Water: Alternative 3 requires 140-foot buffers to be left on the edges of unstable areas. Therefore the risk of mass wasting and delivery to surface waters is somewhat less than the risk under the No Action or Preferred alternatives. Otherwise there are no additional

Lake Whatcom Landscape Plan

DEIS Alternative 3



Legend

Alternative 3

- Lake Whatcom Landscape Boundary
- Streams
- Roads
- Lake Whatcom
- Mass Wasting Plus Buffer
- Potentially Unstable Slopes
- Riparian Buffer
- Wind Buffer — Wind buffers shown are computer generated. In practice, they would be placed on the side of the stream with prevailing winds.
- Potentially Inaccessible Areas
- DNR Managed Forest Land

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benefits to surface water quality. None of the alternatives are likely to adversely affect the public water supply.

Plants and Animals: The trend toward more acres of the landscape in mature forest and fewer acres in young stands would be increased in Alternative 3, with less land accessible for commercial forestry activity, a longer rotation age, and more retention requirements for harvest units than the previous alternatives. Under this alternative there would be fewer impacts because there would be fewer entries. At the same time, this shift to late seral conditions would make the forest more prone to insects and diseases. Increased buffer widths on all streams, restrictions on yarding across streams and construction of stream crossings, and further restrictions on operations on unstable slopes would reduce sediment inputs, provide more protection to riparian and wetland soils and vegetation, and potentially positively affect stream temperatures on those streams receiving the buffers and possibly on downstream reaches as well.

The same species-specific protection identified under the No Action Alternative applies to Alternative 3. The larger riparian buffers provided under Alternative 3 have the potential to provide more effective mitigation for amphibians, as well as birds, small mammals, and other fauna associated with riparian habitat, as well as interior and/or mature forest habitat. A significant difference under Alternative 3 is the requirement to incorporate Washington State Department of Fish and Wildlife's Priority Habitat Species management guidelines for all applicable wildlife species, which impose additional timing restrictions or buffers for some species.

Timber Resources: Alternative 3 makes approximately 5,475 acres or about 35 percent of the trust land acreage in the landscape available for harvest. No regeneration harvest is permitted under this alternative and annual harvest is less than 10 percent of that under the No Action Alternative. The ability to begin harvest operations will be delayed until sufficient acreage and volume is available to cover costs of logging, new road construction, reconstruction, layout and administration costs. Thinnings in helicopter terrain may not be economically feasible. Delays in the extraction of timber are also expected until trees reach rotation age of 140. Very poor access and limitations on regeneration harvests limit options for logging equipment. Increasing retention levels increases all operational costs because of higher complexity of sale layout and logging, costlier logging methods, and higher levels of road construction (Burns, et al 1983). Some areas would be inaccessible to harvest, as landings suitable to helicopter operations would not be available. A high reduction in average site index for lands available for harvest will occur with subsequent reductions in yields per acre. Shade tolerant species will be favored through greater tree retention. See Table 6 for the cumulative effects to the timber resources.

Special Forest Products: The primary impact would be financial, since Alternative 3 would result in reduced revenue potential for special forest products as compared with the No Action Alternative. Because of reduced vehicle access there would likely be reduced opportunities under Alternative 3 for harvest of special forest products. With this alternative, as with the others, potential conflicts over medicinal plants traditionally used by Native Americans could impact commercial harvest.

Carbon Sequestration: Alternative 3 would be less favorable from an efficiency standpoint for sequestering carbon than both the No Action Alternative and the Preferred Alternative since it

significantly reduces the number of acres available for harvest. With reduced harvest activity there will be less forest regeneration with young, rapidly growing trees, which more actively remove and sequester atmospheric carbon than older trees on an annual basis. The amount of stored forest carbon under Alternative 3 may increase over time beyond what is captured in the No Action Alternative.

Environmental Health: There would be reduced risk of debris-flow events compared to the No Action Alternative and Preferred Alternative due to less road construction and timber harvesting. However, debris flows will occasionally still occur as natural events in the landscape.

Land and Shoreline Use: Visual impacts are likely to be less because of reduced harvest under this alternative. Options for selection of silvicultural systems are reduced; consequently the ability to control stand structure, composition and density as well as rotation length and maximize yields are reduced compared to the other alternatives.

Cultural Resources: Under Alternative 3 the department would develop a Cultural Resource Management Plan with the affected tribes within one year of adopting the landscape plan. Alternative 3 also references Lummi Tribal codes and resolutions; due to constitutional, statutory regulatory and case law constraints, this portion of Alternative 3 could not be implemented in the Lake Whatcom watershed.

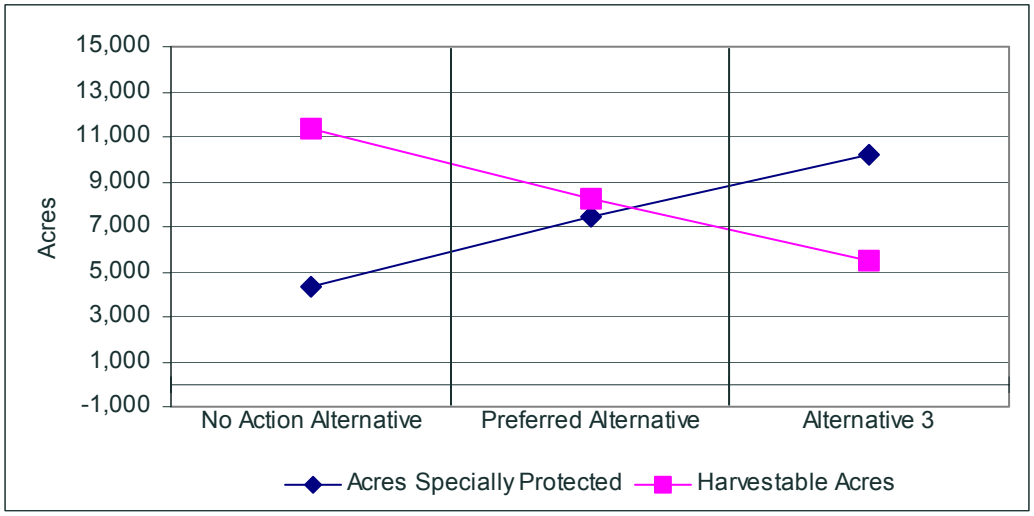
Transportation: Given the increase in rotation age to 140 years from 60 years under this alternative, road construction should also be spread out over the longer period. If construction were to occur evenly over the 140 years, about two miles of new roads would be built in the first decade. Approximately 30 miles of new road would be constructed overall to complete the road system. The number of miles to be abandoned will be determined after completion of a Road Maintenance and Abandonment Plan.

Public Services and Utilities: Alternative 3 would provide $28,908,000 in projected total undiscounted revenue for local counties and state school construction over the full planning period. This alternative dedicates 90 percent of the land's productive capacity for ecological and social benefits, compared to over 50 percent in the No Action Alternative and 75 percent under the Preferred Alternative.

Summary and Comparison of Impacts

The three alternatives vary in the way they would focus management of state trust lands in the Lake Whatcom landscape planning area to simultaneously provide environmental protection on DNR-managed lands, contribute to water quality in the planning area, and assure the economic viability of trust lands for the long-term benefit of trust beneficiaries. The No Action Alternative assumes compliance with existing plans such as the Forest Resource Plan and DNR's Habitat Conservation Plan and applicable statutes and regulations, such as the Forest Practices Rules; it corresponds to DNR's current practices on state trust lands outside the Lake Whatcom watershed. The Preferred Alternative and Alternative 3 use this base, incorporate the additional requirements of E2SSB 6731, and reduce the portions of the landscape available for active land management in pursuit of a higher degree of environmental protection, as illustrated in the graphic below:

Figure 2: Specially Protected Acres / Harvestable Acres



Protection of water quality of streams and wetlands on DNR-managed lands and in Lake Whatcom itself hinges largely on strategies to maintain riparian function through buffers to minimize sedimentation and create and maintain good quality habitat for salmonids, amphibians and other creatures that use riparian zones. In addition, all alternatives would apply the Lake Whatcom Watershed Analysis Prescriptions and adhere to Forest Practices Rules in planning and conducting land management activities.

Table 2: Comparison of Riparian Protection through Buffers

Comparison of Riparian Protection through Buffers			
	No Action Alternative	**Preferred Alternative**	**Alternative 3**
Type 1 waters (each side)	160 ft.	160 ft.	250 ft.
Type 2 waters " "	160 ft.	160 ft.	250 ft.
Type 3 waters " "	160 ft.	160 ft.	200 ft.
Type 4 waters " "	100 ft.	100 ft.	150 ft.
Type 5 waters " "	0 ft.	33 ft.	150 ft.
Wind buffers " "	Per HCP on Types 1, 2, 3 in windthrow prone areas; if moderate potential for windthrow, 100 ft on Types 1& 2 and 50 ft. on Type 3 > 5 ft. wide.	Per HCP on Types 1, 2, 3 in windthrow prone areas; if moderate potential for windthrow, 100 ft on Types 1& 2, 50 ft. on Type 3 > 5 ft. wide.	In windthrow prone areas, 140 ft. on all streams.
Wetlands >1 acre	The greater of the height of 100-yr.-old site potential tree or 100 ft.	The greater of the height of 100-yr.-old site potential tree or 100 ft.	Height of 200-yr.- old site potential tree
Wetlands .25 acre-1 acre	100 ft.	100 ft.	Height of 200-yr.- old site potential tree

Harvest in RMZ	Per HCP when procedures have been developed.	Per HCP in Types 1-4 when procedures have been developed. Type 5: only for roads and yarding corridors.	Types 1-5: only for roads and yarding corridors; retained as down wood in Type 5.

The table below shows the protection given to Type 5 streams under each alternative. Information about streams on unstable slopes is given to show streams that are already protected by other strategies. Because the No Action Alternative does not require buffers on Type 5 streams no buffered area is shown in the table. However, in practice Type 5 streams sometimes are buffered to comply with DNR's Forest Resource Plan, which states that "the department will protect Type 5 waters when necessary for water quality, fisheries habitat, stream banks, wildlife and other important elements of the aquatic system."

Protection of Type 5 streams under the HCP is likely to change in the next few years, pending results of current research on timber harvest impacts to Type 5 streams and efficacy of buffers which was mandated by HCP commitments.

Table 3: Type 5 Stream Protection

Type 5 Stream Protection Miles of Stream (Acreage Buffered is in Parentheses)			
	No Action Alternative	Preferred Alternative	Alternative 3
Total length of Type 5 stream (and buffered area)	46 miles	46 miles (320 acres)	46 miles (899 acres)
Unstable slopes	23 miles*	23 miles (146 acres)	25 miles^ (436 acres)
Potentially unstable slopes	-	10 miles (73 acres)	9 miles (106 acres)
Streams not protected by unstable or potentially unstable slope strategies	23 miles	13 miles (101 acres)	12 miles (357 acres)

* DNR's HCP prescribes protection of type 5 streams on unstable slopes but does not state a specific buffer distance.
^ Alternative 3 applies buffers to unstable slopes; acreage includes buffers.

Slope stability and mass wasting issues in the Lake Whatcom landscape generally are addressed through the alternatives' approaches to road locations, construction and maintenance and timber harvest activities. It is important to note that slope failures also can occur independent of road and timber management activities.

Table 4: Slope Stability and Mass Wasting

Slope Stability and Mass Wasting			
	No Action Alternative	Preferred Alternative	Alternative 3
Roads	Follow HCP and Watershed Analysis prescriptions for road construction and maintenance. On-site evaluation of proposed	No new road building & limited reconstruction, on unstable slopes. On-site evaluation and I-J review of proposed activities on or adjacent	On-site evaluation of proposed activities on potentially unstable slopes, and I-J review. No road construction on unstable areas, 140-

	activities on potentially unstable slopes. Minimize new roads. Develop and begin to implement Road Maintenance & Abandonment Plan within one year of landscape plan completion and approval. Road network: Active roads: 44 mi. Orphaned roads: 42 mi. To be built: 62 mi. Perm. network: 41 mi. Density: 1.8mi./sq. mi.	to potentially unstable slopes. Follow Watershed Analysis road construction prescriptions. Develop and begin to implement Road Maintenance & Abandonment Plan within one year of BNR landscape plan approval & complete maintenance and abandonment work within four years. Road network: Active roads: 44mi. Orphaned roads: 42 mi. To be built: 43 mi. Perm. network: 35 mi. Density: 1.7mi./sq. mi.	ft. edge buffer adjacent to unstable areas Road network: Active roads: 44 mi. Orphaned roads: 42 mi. To be built: 33 mi. Perm. network: 31 mi. Density: 1.3mi./sq. mi.
Timber Harvest	Follow Watershed Analysis mass-wasting prescriptions related to timber harvest. On-site evaluation of proposed activities on potentially unstable slopes outside Watershed Analysis mass wasting units. Apply HCP requirements for hydrologic maturity.	Follow Watershed Analysis mass-wasting prescriptions related to timber harvest. Review by I-J of proposed activities on or adjacent to potentially unstable slopes, road reconstruction on areas identified as unstable by on-site evaluation. On-site evaluation of proposed activities on or adjacent to potentially unstable slopes by specialist.	Follow Watershed Analysis mass-wasting prescriptions related to timber harvest. No harvest on unstable areas, 140-ft. edge buffer adjacent to unstable areas, with 20% thinning allowed in outer 50 ft. of buffer. Thinnings with 50% retention by basal area on potentially unstable slopes
Debris flow risk	LWD in Smith Creek will be cut into chunks to reduce risk of log jams and debris flow	LWD in Smith Creek will be cut into chunks to reduce risk of log jams and debris flow	LWD in Smith Creek will be cut into chunks to reduce risk of log jams and debris flow

Mechanisms such as riparian management buffers, wetland buffers and wind buffers often provide protection for cultural resources (both known recorded sites and unknown sites), including sites used for ritual bathing, spirit quests, gear storage and gathering of plants for traditional uses. Under all the alternatives there is continuing risk to unknown sites.

Table 5: Acres not already protected by other mechanisms which would require special consideration in planning to avoid or mitigate impacts to cultural resources from forest management activities.

No Action Alternative	Preferred Alternative	Alternative 3
980.5	358.5	199

Table 6: Cumulative Impacts on Timber Harvest

Cumulative impacts of each alternative on the availability of acreage open to commercial harvests, average annual harvests, average harvest volumes per acre and the annual acreage treated as regeneration, thinning and partial cut harvests.

	No Action Alternative	Preferred Alternative	Alternative 3
Acres available for harvest or restoration activities	11,390	8,276	5,475
Percentage of 15,707-acre planning area	73	53	35
Draft average annual harvest volume (thousand board feet/year)	5,511	2,733	492
Draft average Harvest Volume (thousand board feet /acre)	37	30	9
Draft annual acreage treated as regeneration harvests	89	43	0
Draft average annual acreage treated as thinning harvests	47	35	18
Draft annual average acreage treated as partial cut harvests	11	13	11

Note: The numbers in this table are approximate, resulting from modeling analysis, and used for comparative evaluation for planning purposes only. (Source: Road Summary, Stuart, 2003; Comparison of February 02 Sustainable Harvest Model Run, Brodie, 2002.)

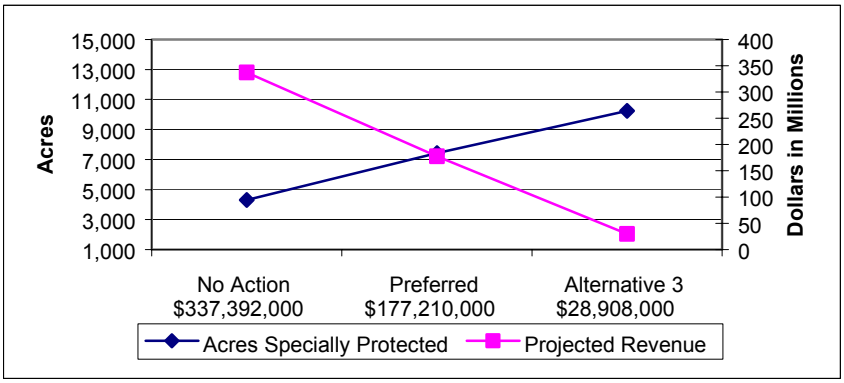
As less of the forested trust land within the landscape becomes available for active land management, including timber harvest and road construction for access for harvesting, potential beneficiary revenue is reduced accordingly.

Table 7: Summary of projected undiscounted revenues for the Lake Whatcom landscape planning unit.

Alternative	Average annual revenue for first two decades	Total Revenue for first two decades	Total revenue for entire modeled planning period (200 year)	Total revenue for entire modeled planning period: comparison with No Action Alternative
No Action	$1,786,000	$35,720,000	$337,392,000	$0
Preferred	$1,572,000	$31,440,000	$177,210,000	-$160,182,000
Alternative 3	$365,000	$7,300,000	$28,908,000	-$308,484,000

Note: Totals may not add due to rounding

Figure 3: Acres Specially Protected/Projected Revenue



Review of the Affected Environment, Potentially Significant Environmental Impacts, & Mitigation Measures for the Proposed Alternatives

The PDEIS, which was part of the scoping process, discussed known information regarding the affected environment, potentially significant impacts and mitigation measures for five proposed alternatives. The DEIS provides analysis of the affected environment, potentially significant impacts and mitigation measures specific to the three final alternatives, including the preferred alternative developed by DNR and the Committee. This analysis incorporates information and considers concerns raised during the PDEIS public comment process. (The PDEIS, comments and response are available on the Internet at DNR's homepage, http://www.dnr.wa.gov.)

Affected Environment – Existing Conditions

Natural Environment [6]

Earth

Topography and Relief

The Lake Whatcom Landscape Management Planning Area is located in the North Cascades Physiographic Province. It consists of two north-south trending ridges separated by a basin in which Lake Whatcom is located. Lookout Mountain is located west of the lake, Stewart Mountain to the east, and Anderson Mountain to the southeast.

Elevations vary from 307 feet above sea level at the surface of Lake Whatcom to 3,364 feet atop Anderson Mountain, based on US Geological Survey topographic mapping. Ridges on Stewart and Anderson mountains have general elevations of approximately 3,000 feet, while Lookout Mountain is 2,677 feet at the summit.

[6] Each analyst worked independently, often accessing different GIS and other data sources. As a result, percentages and acreages of different forest types and other elements may vary slightly from section to section though the general patterns will be similar and accurate.